

REMARKS

Reconsideration and removal of the grounds for rejection are respectfully requested.

Claims 1-20 were in the application, claims 4, 7-10, 12 and 13 have been cancelled, claims 11 and 17-20 have been amended and new claims 21-54 have been added.

The examiner indicated that claims 5, 8-10, 12, 13, 16, 19 and 20 would be allowable if placed in independent form. To that end, new claim 21 places claim 5 in independent form, claims 22-28 depending therefrom. New claim 29 places claim 10 in independent form, claims 30-36 depending therefrom. New claim 37 places claim 13 in independent form, the limitation of claim 12 incorporated into claim 11 to place claim 12 in independent form. Claim 16 has been placed in independent form as new claim 38. Claim 19 has been placed in independent form as new claim 39, claim 40 depending therefrom.

In view of the above, claims 11, 14-16, and 21-40 are believed to be in condition for allowance.

Claims 17-20 are also believed to be in condition for allowance, claim 17 amended to add essentially the subject matter of claim 19 therein except for using the terms "first electrochemical cell" and "second electrochemical cell" rather than "battery" or "electroplating" electrochemical cell. As claim 17 as amended is comparable in scope to allowed claim 19, claims 17-20 are also believed to be allowable over the cited art.

New claims 41-46 are method similar to claim 17, directed to providing an interchangeable electrolyte. New claim 41 corresponds to original claim 17, adding the limitation "recovering the interchangeable electrolyte and adjusting the specific gravity of the interchangeable electrolyte by dilution or concentration prior to reuse."

No such recovery step is found in the cited prior art and claim 41 is believed to distinguish therefrom and be in condition for allowance.

New claim 42 is a variation of claim 17 which specifically describes use of the interchangeable electrolyte in a first electrochemical cell, removing the interchangeable electrolyte and adjusting its specific gravity for use in a second electrochemical cell.

Again, such steps are not literally found in the prior art, not taught or even suggested and claims 42-46 are believed in condition for allowance.

New claims 47-54 are directed to a method for determining whether an electrolyte obtained from an electrochemical cell can be reused. This is extensively described in the specification, P. 9, L. 15-P.14, L. 31, with examples 1 and 2. A method of determining whether an electrolyte can be reused is not found in the prior art, is novel and unobvious, and consequently claims 47-54 are believed allowable over the art.

The only remaining claims not discussed are claims 1-7. Note that claim 5 has been amended to refer to the dilution or concentration of the electrolyte prior to interchangeable use, the substance of original claim 5 now incorporated in new claim 21 as discussed above. This was done to maintain an organized grouping of the claims depending from claim 1.

Claims 1-4, 6, and 7 were rejected under 35 U.S.C. §102(b) as being anticipated by Young, U.S. Patent No. 4,801,511.

Under 35 U.S.C. §102, anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference. W.L. Gore & Assocs., Inc. v. Garlock, Inc., 220 USPQ 303 (Fed. Cir. 1983). All the limitations in the claims must be found in the reference, since the claims measure the invention. In re Lange, 209 USPQ 288, 293 (CCPA 1981). Further the reference must describe the applicants' claimed invention sufficiently to have placed a person of ordinary skill in the art in possession of the invention. In re Spada, 15 USPQ 2d 1655 (Fed. Cir. 1990).

The Federal Circuit has stated that "even if the claimed invention is disclosed in a printed

publication, that disclosure will not suffice as prior art if it is not enabling.” In re Donohue, 766 F.2d 531, 533 (Fed. Cir. 1985) (citing In re Borst, 345 F.2d 851, 855 (C.C.P.A. 1965), cert. denied, 382 U.S. 973 (1966), Seymour v. Osborne, 789 U.S. (11 Wall.) 516, 555 (1870) (publication constitutes anticipation only if it enables one skilled in the art “to understand the nature and operation of the invention, and to carry it into practical use”).

In the first instance, Young does not contain an enabling disclosure. Claim 1 is directed to an “interchangeable electrolyte”, that is, one that may be used, itself, interchangeably between battery cells and electroplating cells, “interchangeable” meaning it can be taken from one cell and used in another.

No such “interchangeable electrolyte” is shown or described in Young. Rather, Young proposes a “chalcogen containing compound” that with sulfuric acid forms an adduct. “The presence of the acid in the form of an adduct rather than the free acid apparently accounts for the observed improvements... dilution of the acid chalcogen compound adduct should not be so great as to promote disassociation of the adduct and the formation of appreciable free acid.” (See also Col. 7, L. 27-40). At no point anywhere in the Young Patent is there any suggestion to transfer electrolyte from one electrochemical cell to another. Rather the focus is on substituting the adduct containing the chalcogen compound for a significant portion of sulfuric acid. The chalcogen is present at from at least 5 to 80 weight percent, preferably in a 1 to 1 molar relationship to the sulfuric acid.

At such high concentrations, and with such sensitivity to dilution, an interchangeable electrolyte as defined in accordance with the present invention is not achieved.

Claim 1 also requires “a surface deposition modifying additive”, another element not found in Young.

More specifically, Young’s preferred compound is urea, which is an amide, not an amine.

Amides have a different structure and different properties to amides. (See Exhibit A). The use by Young of an amide would not inherently provide an interchangeable electrolyte in accordance with claim 1. Certainly the description of the chalcogen compound does not suggest such a capability.

The purpose of chalcogen containing compound in Young is to modify the properties of the sulfuric acid, with nothing to suggest that this modifies the surface deposition properties of the electrolyte as a whole.

Young identifies the problem as follows:

“The use of strong acids, particularly in high concentrations, is often avoided since such acids generally detract from the quality of the finished product and complicate process control. In particular, strong acids... diminish the homogeneity, brightness and dimensional conformity of treated surfaces, reduce the tenacity of plated metals, waste energy in the production of hydrogen and/or oxygen, and at best, limit the current density range of electrode voltages...”(Col. 2, L. 62-Col. 3, L. 3).

The advantages allegedly obtained are specifically directed to altering the strong acid effects, i.e. by attenuating acid protein lability due to association of the chalcogen-containing compound with the acid, by forming an adduct. (Col. 5, L. 40-44).

There is an actual reaction between the urea and the acid when forming the adduct. Young states “the chalcogen compound-acid combinations can be formed in site in the electrolytic bath or they can be preformed by reaction of the chalcogen compound with the acid. However, such reactions are highly exothermic and the reaction either must be conducted very slowly or adequate cooling must be provided to dissipate the heat of reaction.... to avoid exceeding the thermal decomposition temperature... combinations of urea and sulfuric acid which have molar ratios below 2 begin to decompose at approximately 80° C and decompose violently


at about 90° C...".

Thus, the urea is not a proposed "additive", but rather a reactive compound that reacts with the strong acid to form an adduct which is a "substitute" for a portion of the sulfuric acid. Altering the properties of the strong acid, is not comparable to the "surface deposition modifying additive of claim 1.

As each and every element of claim 1 is not found in Young, and Young fails to provide an enabling disclosure, claim 1 and the claims dependent therefrom are not anticipate thereby. Based upon the above amendments and remarks, favorable consideration and allowance of the application is respectfully requested. However, should the examiner believe that direct contact with the applicant's attorney would advance the prosecution of this application, the examiner is invited to telephone the undersigned at the number given below.

Respectfully submitted,

Coleman Sudol Sapone P.C.
714 Colorado Avenue
Bridgeport, CT 06605
Telephone No. (203) 366-3560
Facsimile No. (203) 335-6779


William J. Sapone
Registration No. 32,518
Attorney for Applicant(s)